

METHOD OF MANUFACTURE OF THIN SILICON ON INSULATOR (SOI) CMOS WITH RECESSED CHANNEL AND DEVICES MANUFACTURED THEREBY

Abstract

An RSD FET device with a recessed channel is formed with a raised silicon S/D and a gate electrode structure on an SOI structure by the steps as follows. Form a SiGe layer over the silicon layer and a RSD layer over the SiGe. Etch through the RSD layer and the SiGe to form a gate electrode space reaching down the silicon layer. Form a pair of RSD regions separated by the gate electrode space. Line the walls of the gate electrode space with an internal etch stop layer and an inner sidewall spacers. Form a gate electrode inside the inner sidewall spacers on the silicon layer. Form external sidewall spacers adjacent to the gate electrode between the RSD regions next to the inner sidewall spacers, and dope the RSD regions, whereby a recessed channel is formed in the SOI silicon layer between the raised source/drain regions above the SiGe layer.